

1 Thermal dielectron measurements in Au+Au  
2 collisions at BES-II energies with the STAR  
3 experiment

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5 Dielectrons, emitted during the evolution of the hot and dense QCD medium  
6 created in relativistic heavy-ion collisions, offer an effective probe of the hot  
7 medium properties, as they do not involve strong interactions. The dielectron  
8 emission rate is proportional to the medium's electromagnetic spectral function.  
9 In the dielectron mass range from 400 to 800 MeV/c<sup>2</sup>, the spectral function  
10 probes the in-medium  $\rho$  meson propagator which is sensitive to the medium's  
11 properties including the total baryon density and the temperature. By measur-  
12 ing thermal dielectron production, we can study the microscopic interactions  
13 between the electromagnetic current and the medium. The RHIC Beam Energy  
14 Scan (BES) program provides a unique opportunity to systematically study di-  
15 electron production in a collision energy range where the total baryon density  
16 and temperatures are varying substantially.

17 In this talk, we will report on STAR measurements of thermal dielectron  
18 produced in Au+Au collisions at  $\sqrt{s_{NN}} = 7.7, 9.2, 11.5, 14.6$  and 19.6 GeV.  
19 The results will include the thermal dielectron spectra, differential/total excess  
20 yield, and the temperature extracted from the low invariant mass range, as  
21 well as their collision energy dependence. In addition, these new preliminary  
22 results will be compared to the results from STAR BES-I and theoretical model  
23 calculations for the discussions of the physics implications.